

U.S. Patent Application No. 10/074,333
Amendment dated December 23, 2003
Reply to Office Action dated September 23, 2003

AMENDMENT TO THE SPECIFICATION

Please substitute the following amended paragraphs for the paragraphs with the same paragraph numbers:

[0027] With respect to the above formulas I and II, n is preferably 0, m is preferably an integer of 2 to 5. Examples of the branched alkyl or cycloalkyl group include, but are not limited to, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicycloheptyl, iso-octyl, 3-methyl pentyl, iso-amyl, iso-pentyl, ~~2,5-dimethyhexyl~~ 2,5-dimethylhexyl, 4-methyl-2-pentyl, iso-propyl, iso-butyl, t-butyl, iso-pentyl, and sec-pentyl, and the like. Examples of the n-alkyl include, but are not limited to, n-butyl, n-pentyl, n-hexyl, n-heptyl, n-octyl, n-nonyl, n-decyl, and the like. Substituents to the R³ group may include a replacement for a carbon atom with atoms such as oxygen, nitrogen, or sulfur, with the proviso that the carbon atom adjacent to the silicon is not replaced. Other substituents include replacement of the hydrogen atom attached to carbon with halogen atoms, nitrogen, sulfur, oxygen, and organofunctional groups, such as cyano, urea, esters, amides, oxo, and the like.

[0086] Table 6 B below shows the effect of formulation on coating properties. The silane containing latex used for all these formulations was Sample 22. Sample 23 was made with Sample 16. Sample 24 was made with Sample 15. The formulations of the coatings were developed from the raw latex as identified above. The following formulation components were added using a propeller blade-type mixer, each additive being adjusted according to solids content and latex viscosity: Surfactant: 2 wt% on solids, Triton X-405 (Octylphenoxyethoxyethanol); Ammonia (7 wt% in water) to adjust the pH; Coalescing agent: 10-15 wt% - DPM (Dipropylene Glycol Methyl Ether); Texanol (2,2,4-

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trimethylpentanediol monobutyrate); Thickener: (Acrysol RM-825 (polyurethane resin, diethylene glycol monobutyl ether, and water), from Rohm & Haas), 0.1 to 3 wt% on solids; and Wetting agent: (BYK 346, polyether modified dimethyl polysiloxane), 0.1 to 2 wt% on solids. The films were cast on black leneta paper to determine if there were any defects. The formulations were then applied to different substrates with a draw down applicator. These substrates were glass or non-treated aluminum or chromated aluminum panel. For crosslinking of the catalyst system, the drawn downs were done within 3 hours after the addition of the crosslinker. The panels were cured at ambient temperature (or additionally cured with heat when required) and properties were measured after at least two weeks aging. The catalysts used were Faseat FASCAT ® 4224 (Organotin mercaptide) from Atofina and AMP-95 (2-amino 2-methyl 1 propanol) from Angus Chemical. In the table, D = dissolved.

Sample #	comments	treatment	MEK Swelling ratio	MEK soluble fraction	THF Swelling ratio	THF soluble fraction	konig hardness (Seconds)	pencil hardness	strain @ break (%)
23	Control , no silane	30mn@100C	D	D	D	D	110	-	10
24	Control , no silane	20mn @120C	D	D	D	D	116	-	-
22A	neutralized, DPM	40mn@120C	2.12	29	4.11	20.6	120	F	16
22B	22A+Fascat 4224	15mn@120C	4.9	20	4.8	26	115	B	14
22C	22A+AMP-95	15mn@120C	2.3	37	2.7	41	116	F	9.8

As can be seen in Table 6B, the coatings made from the compositions of the present invention had higher solvent resistance (no dissolution).